Indiana State Department of Health
Epidemiology Resource Center

Guidance for Management of Varicella and Herpes Zoster in Healthcare Settings

Background

Varicella (chickenpox) is a highly contagious viral illness caused by the varicella-zoster virus (VZV) characterized by a diffuse (generalized) and usually pruritic maculo-papulovesicular rash. Early symptoms may also include fever, fatigue, headache, and loss of appetite, which may occur 1 to 2 days before rash onset, especially in adults. The virus is transmitted from person to person by inhalation of or contact with respiratory secretions or lesion fluid of an infected person. The average incubation period for varicella is 14 to 16 days after exposure (range: 10 to 21 days). Infected individuals are contagious approximately 2 days before rash onset until all the blisters have formed scabs (usually 4 to 7 days after rash onset) or until no new lesions have appeared in a 24-hour period if the patient has non-vesicular lesions.

Herpes zoster (shingles) is a reactivation of VZV in a person previously infected with the virus and is characterized by vesicular lesions usually distributed in a dermatomal pattern. In cases of localized zoster, lesions are confined to one or two adjacent dermatomes. Some patients, such as those who are immunocompromised, may develop disseminated zoster, where lesions occur in three or more dermatomes. Individuals who are susceptible to varicella can develop chickenpox if exposed to a patient with herpes zoster. Localized zoster is generally considered less contagious than primary varicella, but disseminated zoster is considered as contagious as varicella.

This document is intended to serve as a guide for healthcare facilities in managing cases of varicella or herpes zoster in healthcare settings and is based on guidance from the Centers for Disease Control and Prevention (CDC) and American Academy of Pediatrics' (AAP's) *Red Book.* Decisions regarding management of varicella in healthcare settings should be implemented based on hospital infection prevention protocols.

Management of Patients with Varicella or Herpes Zoster

Only healthcare personnel with documented evidence of immunity should care for patients with varicella or herpes zoster. In addition to standard precautions, the following isolation precautions should be instituted for patients with varicella or herpes zoster:

- Patients with varicella (chickenpox): Institute airborne and contact precautions until all lesions have crusted or, if lesions do not progress to vesicles, until no new lesions have appeared in a 24-hour period.

- Immunocompetent patients with localized herpes zoster: Institute standard precautions and keep lesions completely covered.
- Immunocompromised patients with localized herpes zoster: Institute airborne and contact precautions until disseminated herpes zoster can be ruled out. If disseminated herpes zoster is ruled out, follow standard precautions until lesions are dry and crusted and keep lesions completely covered.
- Patients with disseminated herpes zoster: Institute airborne and contact precautions until lesions are dry and crusted.

Evidence of Immunity to Varicella

Evidence of immunity to varicella includes:

- Documentation of age-appropriate varicella vaccination:
    - Preschool-aged children (e.g., 12 months through 3 years): one dose
    - School-aged children, adolescents, and adults: two doses
- Diagnosis or verification of a history of varicella or herpes zoster by a healthcare provider
- Laboratory evidence of immunity or laboratory confirmation of disease
- Birth in the United States before 1980 (Note: Birth in the U.S. before 1980 should **not** be considered evidence of immunity for healthcare personnel, pregnant women, or immunocompromised individuals.)

Post-Exposure Prophylaxis

Varicella vaccine is recommended for unvaccinated healthy individuals aged 12 months or older without evidence of immunity. The vaccine should be given within 5 days of exposure to an infectious person to prevent or modify the disease. Varicella vaccine given 6 or more days after exposure is still indicated to protect against subsequent exposures.

Exposed susceptible individuals who cannot receive varicella vaccine may be given varicella zoster immune globulin (VariZIG). VariZIG should be administered within 10 days, but ideally within 96 hours, of exposure. VariZIG should be considered for individuals without evidence of immunity who are at risk for severe varicella or varicella complications and for whom vaccination is contraindicated, including:

- Immunocompromised individuals
- Pregnant women
- Newborns whose mothers developed chickenpox from 5 days before through 2 days after delivery
- Preterm infants born at less than 28 weeks gestation or weighing 1,000 grams or less (regardless of maternal history of disease or vaccination)
- Preterm infants born at 28 weeks gestation or later who are exposed during the neonatal period and whose mothers do not have evidence of immunity

Identification and Management of Staff Exposed to Varicella

- Assess any staff exposed to patients with varicella or herpes zoster for evidence of immunity. Note that birth in the United States before 1980 is **not** considered sufficient evidence of immunity for healthcare workers.
- Institute appropriate management of exposed staff:
    - Staff with **two** documented doses of varicella vaccine:
        - Monitor staff daily from day 8 following first exposure through day 21 following last exposure for fever, skin lesions, and systemic symptoms suggestive of varicella. Staff with two documented doses of varicella vaccine may continue to work unless they develop symptoms.
        - If symptoms occur, healthcare personnel should be immediately removed from patient care areas. They should be given antiviral medication as appropriate and determined by a healthcare provider.
        - Healthcare personnel with varicella or disseminated herpes zoster should be excluded from work until all lesions have dried and crusted or, in the absence of vesicular lesions, until no new lesions have appeared for 24 hours.
    - Staff with **one** documented dose of varicella vaccine:
        - Administer a second dose, preferably within 3 to 5 days after exposure (as long as at least 28 days have elapsed since the first dose). After vaccination, management of these staff should be similar to staff with two documented doses of vaccine.
    - Staff without documented evidence of immunity to varicella:
        - Furlough exposed workers from day 8 following first known exposure through day 21 following last known exposure (or through day 28 following last exposure if VariZIG was administered).
        - Staff should be offered post-exposure prophylaxis as appropriate but should remain excluded from patient care for the duration specified above.

Identification and Notification of Patient Exposure

Experts differ on what is considered significant varicella exposure, but exposure is typically thought to require close contact with an infectious person, such as close indoor contact (within the same room) or at least 5 minutes of face-to-face contact. Transient contact is not thought to result in significant exposure. Considering the potential increased risk for varicella complications among patients in healthcare facilities, however, additional factors that may be considered when determining which patients should be considered exposed include:

- If appropriate airborne and contact precautions were not instituted for inpatients with varicella or disseminated zoster, consider assessing airflow patterns in and around the patient's room to assess potential exposure risk. In the absence of clear evidence that exposure would be limited,

hospitals may consider notifying patients on the case's unit or floor of the potential exposure as a precaution.

- To identify potential exposures in emergency departments or other outpatient settings, consider the duration of time the infectious patient was in common areas to determine whether significant exposure may have occurred.
- If staff were using appropriate contact precautions and hand hygiene when caring for infectious patients, the risk of transmission due to indirect contact from shared health care workers is likely low, as transmission risk is thought to be primarily from direct contact with infected individuals. If there have been known breaches in contact precautions or hand hygiene, however, consider notifying affected patients cared for by those staff of the potential exposure.

Notify patients determined to be exposed of the exposure as appropriate, particularly pregnant women and any immunocompromised patients. Susceptible exposed patients should be recommended post-exposure prophylaxis, if appropriate, and should be instructed to monitor for signs and symptoms. If exposed patients become symptomatic, they should be advised to seek medical attention and notify their provider of the exposure *before* going to a healthcare facility so that appropriate precautions can be taken.

Management of Susceptible Hospitalized Contacts

For exposed, susceptible contacts who must remain hospitalized, the following measures should be taken:

- Provide post-exposure prophylaxis, as appropriate.
- Isolate exposed, susceptible patients from day 8 following first exposure through day 21 following last exposure, or through day 28 following last exposure if the patient received VariZIG. The AAPs' *Red Book* recommends that exposed susceptible patients who must remain hospitalized should be isolated using airborne and contact precautions.
- If airborne isolation units are unavailable, healthcare facilities should take reasonable steps to limit potential transmission, including placing the patient in a closed single-patient room and instituting other measures as appropriate, such as limiting patient movement within the hospital and masking the patient, if tolerated, if the patient must be moved to other rooms or departments.
- Ensure that only immune staff care for susceptible, exposed patients. Monitor these patients for symptoms, including fever and malaise, which can be symptoms of prodromal illness, particularly among adults. If the patients are not already under airborne and contact isolation, institute these precautions immediately if symptoms develop.

References

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